

Claims:

1. A wavelength division multiplexer assembly, comprising:
a plurality of optical fibers, a first fiber fusing with a second and third fibers and elongating to a length to form a first and second fusion regions at two different portions of the first fiber, the second fiber extended from the first fusion region further fusing with a fourth fiber and elongating to a length to form a third fusion region;
wherein a complex light signal having a plurality of wavelengths is transmitted from the first optical fiber to the first fusion region, a predetermined wavelength is separated and goes into the second fusion region, and is further separated from the second fusion region to the first fiber, the other wavelengths are transmitted to the third fusion region via the second fiber, and are further separated from the third fusion region to the second fiber.
2. The WDM assembly as described in claim 1, further including at least one receiving sleeve receiving the first, second and third fusion regions therein.
3. The WDM assembly as described in claim 2, wherein either end of said receiving sleeve is applied to glue for fixing the optical fibers therein.
4. The WDM assembly as described in claim 2, further including a shrink sleeve enclosing said receiving sleeve therein.
5. The WDM assembly as described in claim 4, wherein either end of said shrink sleeve is applied to glue for avoiding contamination.
6. The WDM assembly as described in claim 4, further including an outer tube receiving the receiving and shrink sleeves therein.
7. The WDM assembly as described in claim 6, wherein said outer tube has a through hole, the diameter of the through hole is larger than the exterior diameter of the receiving sleeve, a space between the shrink sleeve and the outer tube is sealed with glue.

8. The WDM assembly as described in claim 2, wherein the receiving sleeve is made of quartz material.
9. A wavelength division multiplexer assembly, comprising:
 - a plurality of optical fibers, a first fiber fusing with a second and third fibers and elongating to a length to form a first and second fusion regions at two different portions of the first fiber, the second fiber extending from the first fusion region further fusing with a fourth optical fibers and elongating to a length to form a third fusion region, in such way, the plurality of optical fibers forming a plurality of fusion regions;
 - wherein a complex light signal having a plurality of wavelengths is transmitted from the first optical fiber to the first fusion region, a predetermined wavelength is separated and goes into the second fusion region, and is further separated from the second fusion region to the first fiber extending from the second region, the other wavelengths is transmitted to the third fusion region via the second fiber, and a next predetermined is further separated from the third fusion region to the second fiber extending from the third region, and the plurality of fusion regions being capable of separating a plurality of wavelengths from the complex light signal.
10. The WDM assembly as described in claim 9, further including at least one receiving sleeve receiving the plurality of fusion regions therein.
11. The WDM assembly as described in claim 10, wherein either end of said receiving sleeve is applied to glue for fixing the optical fibers therein.
12. The WDM assembly as described in claim 10, further including at least one shrink sleeve enclosing the assembled receiving sleeve therein.
13. The WDM assembly as described in claim 12, wherein either end of said shrink sleeve is applied to glue.
14. The WDM assembly as described in claim 12, further including an outer tube

receiving said assembled shrink sleeve therein.

15. The WDM assembly as described in claim 14, wherein said outer tube has a through hole, the diameter of the through hole is larger than the exterior diameter of the receiving sleeve, a space between the shrink sleeve and the outer tube is sealed with glue.

16. A method for producing a WDM assembly comprising:

providing at least four optical fibers;

positioning a first and second optical fibers parallel to one another, firing to fuse these two fibers and stretching to a length sufficient to cause light signal with the predetermined wavelength to be coupled to the first optical fiber while light with the other wavelength is coupled to the second optical fiber, the first fiber and second fiber thus together form the first fusion region ;

arraying a third fiber and the first optical fiber that extends from the first fusion region next to each other, fusing these two fibers and stretching to a length sufficient to cause light signal with the predetermined wavelength to be coupled to the first optical fiber while light with the other wavelengths are coupled to the third optical fiber, the first fiber and the second fiber thus together form the second fusion region;

fusing a fourth fiber and the second fiber that extends from the first fusion region and stretching a length to cause light signal with a next predetermined wavelength to be coupled to the second optical fiber while light with the other wavelengths are coupled to the fourth optical fiber, thus form the third fusion region, and a plurality of fusion regions being formed in such way;

providing at least one receiving sleeve, receiving the fusion regions therein;

providing a shrink sleeve, enclosing said receiving sleeve therein, the excess fiber lengths extend out of the shrink sleeve being cut off; and

proving an outer tube and receiving shrink sleeve therein.

17. A method of claim 16, wherein either end of said receiving sleeve is applied to glue after the fusion regions is fixed thereinto.
18. A method of claim 16, wherein either end of said shrink sleeve is applied to glue after the receiving sleeve is assembled thereinto.
19. A method of claim 16, wherein a space between the shrink sleeve and the outer tube is sealed with glue after the shrink sleeve is assembled into the outer tube.